

### **REMARKS**

Applicants thank the Examiner for the consideration given the present application. Claims 1-7 are currently pending. Claims 1-5 have been amended and claims 6-12 have been added through this reply. Claims 1, 5 and 9 are independent. Applicants respectfully request reconsideration of the rejected claims in light of the amendment and remarks presented herein, and earnestly seek timely allowance of all pending claims.

#### **Allowable Subject Matter**

Applicants thank the Examiner for the indication that claim 5 contains allowable subject matter.

Claim 5 is rewritten in independent form to substantially include the subject matter of claim 1.

#### **The Claims Define Patentable Subject Matter**

The Office Action rejects claims 1, 2 and 4 under 35 U.S.C. § 102(b) over Japanese Patent Publication No. 2001-241693 to Boku et al. (Boku); and rejects claim 3 under 35 U.S.C. § 103(a) over Boku. These rejections are respectfully traversed.

Independent claim 1 recites, *inter alia*, “the adsorber is formed by adsorption heat exchangers connected to the refrigeration circuit and having an adsorbent carried on their surfaces and the humidity control system is configured so that the sensible heat zone (R) for the refrigerant is larger than that for R22 when compared in terms of refrigeration cycles having substantially the same discharge temperature (B).” The applied reference fails to teach or suggest the recited features of independent claim 1.

The present invention uses the heat exchangers having an adsorbent carried on their surfaces as an adsorber for controlling the humidity of air to be processed. On the other hand, Boku uses a desiccant rotor as an adsorbent. Thus, the method of thermal regeneration of the

adsorbent of the present invention is different from that of Boku. See abstract of Boku. Specifically, the present invention regenerates the adsorbent by directly heating the adsorbent with heat of the refrigerant flowing through the interior of the adsorption heat exchangers. On the other hand, Boku heats the adsorbent with air heated by the heat of a refrigerant of a radiator in order to regenerate the adsorbent. Therefore, the humidity control system of the present invention and Boku differ from each other in the method of regenerating the adsorbent.

Furthermore, the present invention directly heats the adsorbent of the heat exchanger with the refrigerant having a sensible heat zone larger than R22 to improve efficiency of regeneration of the adsorbent. On the other hand, when a refrigerant having such a large sensible heat zone is used for thermally regenerating the adsorbent of the desiccant rotor of Boku, heat in the sensible heat zone of the refrigerant decreases until the heat is utilized for the thermal regeneration of the adsorption. Thus, Boku causes heat loss when heat is exchanged between the refrigerant and the air in the radiator, the heated air flows through the desiccant rotor, and heat is exchanged between the heated air and the desiccant rotor. The larger the sensible heat zone of the refrigerant is, the more the heat loss increases. Therefore, the sensible heat zone of the refrigerant larger than R22 cannot be effectively used for thermal regeneration.

Thus, the present invention can effectively utilize the heat in the sensible heat zone of the refrigerant larger than R22 for the regeneration of the adsorption and offers an improvement over Boku. Based on the property discussed above, the present invention is configured so as to utilize the refrigerant having the sensible heat zone larger than R22 for the thermal regeneration of the adsorption heat exchanger.

For at least the reasons stated above, independent claim 1 is patentably distinct from Boku. The dependent claims are at least allowable by virtue of their dependency on corresponding allowable independent claim 1.

Accordingly, withdrawal of the rejections of the claims based on Boku is respectfully requested.

**New Claims 6-12 are Patentable**

New claims 6-12 are added. New claims 6-8 are at least allowable due to their dependence on allowable independent claim 5 and for the additional features they recite.

Independent claim 9 recites, *inter alia*, a refrigerant circuit “thermally regenerates the adsorber with heat of refrigerant in a heat exchanger in the refrigerant circuit,” “the first adsorption element is connected to the heat exchanger” and “the second adsorption element is connected to the heat exchanger.” The applied reference fails to teach or suggest the recited features of independent claim 9.

Boku discloses a refrigerant circuit (20) filled with refrigerant, i.e., CO<sub>2</sub> (Carbon Dioxide). A humidity conditioning mechanism (30) is provided with a desiccant rotor (31). The heat absorber (24) is supplied with first air dehumidified through the desiccant rotor (31). The desiccant rotor (31) is regenerated utilizing second air heated through the radiator (22). See abstract and drawing 7 of Boku. The passage of Boku relied on for disclosing the adsorber, merely discloses a rotor (31) containing a moisture desorption section (33) and a moisture absorption section (32). The radiator (22) heats up air sent to the moisture desorption section (33). See Drawings 2, 5 and 7 and paragraphs [0072] – [0077] of Boku. The rotation drive of the rotor (31) allows the rotor (31) to move between the moisture absorption section (32) and the moisture desorption section (33). The moisture absorption section (32) moves to the moisture desorption section (33) with rotation of the rotor (31). See paragraph [0078] of Boku. No other adsorption element is heated by the radiator. Thus, the applied reference fails to teach or suggest the recited features of independent claim 9.

For at least the reasons stated above, independent claim 9 is patentably distinct from Boku.

New claims 10-12 are at least allowable due to their dependence on allowable independent claim 9 and for the additional features they recite.

**Conclusion**


In view of the above remarks, it is believed that claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Obert H. Chu, Reg. No. 52,744, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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